

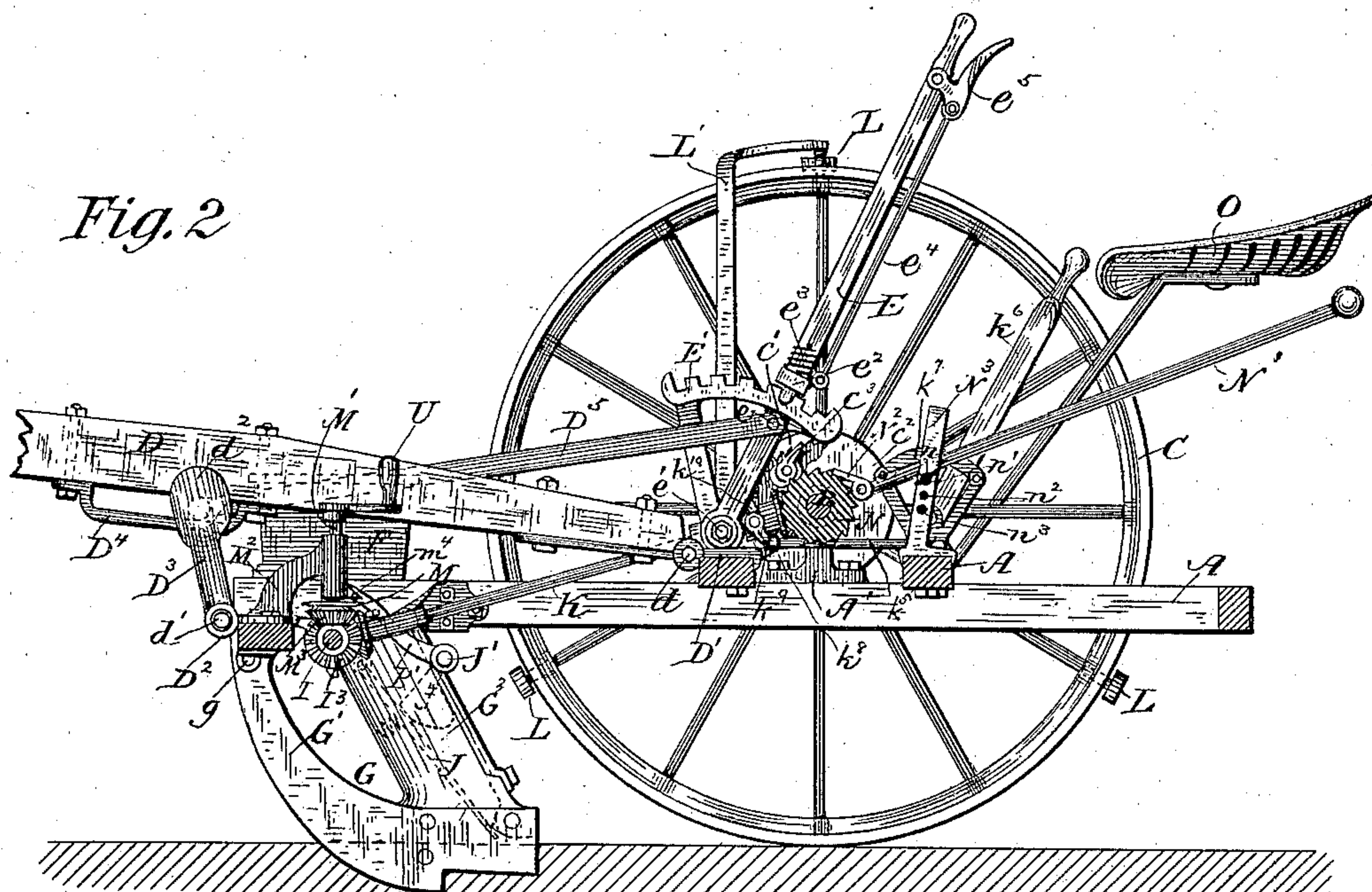
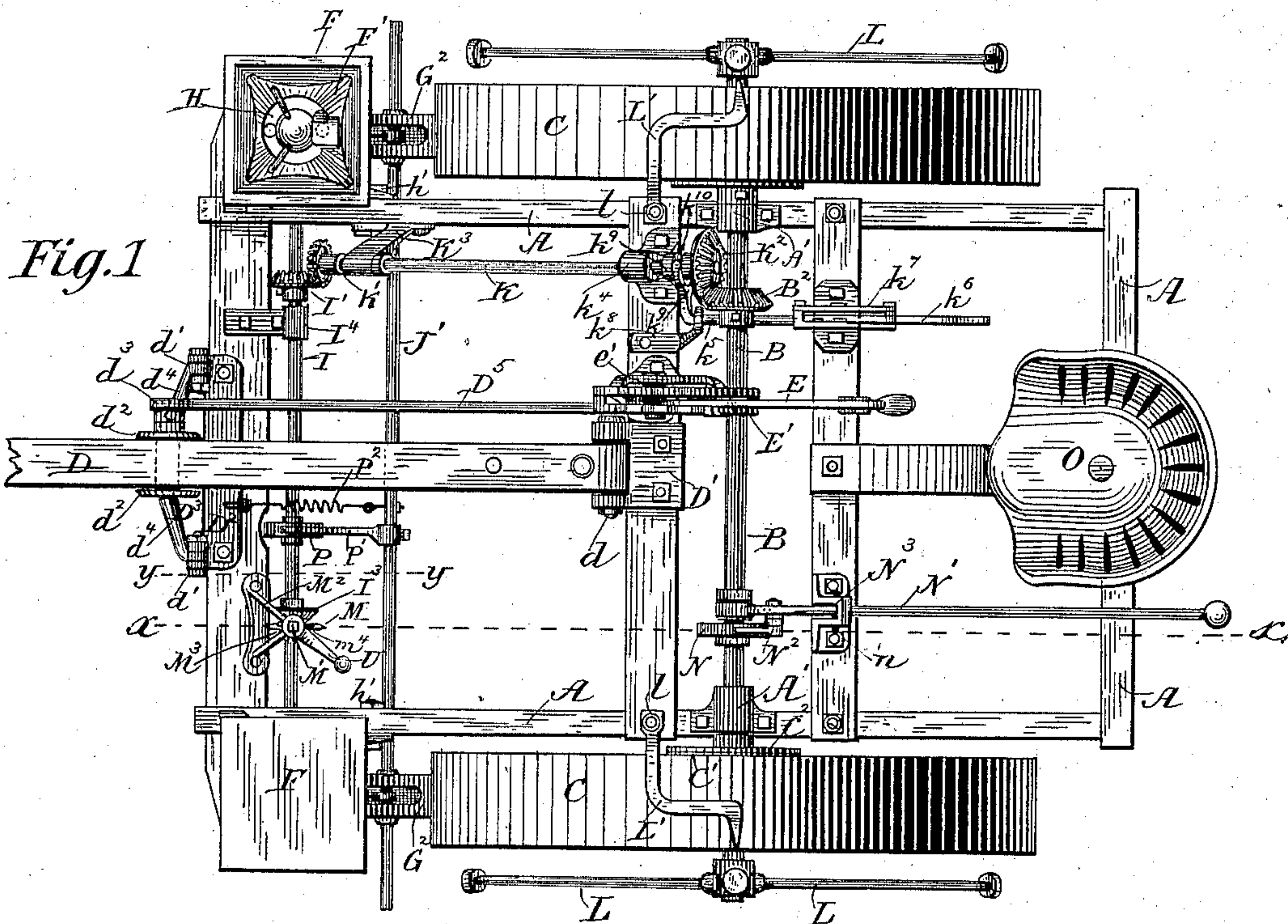
(No Model.)

4 Sheets—Sheet 1.

J. NORRIS.
CORN PLANTER.

No. 365,700.

Patented June 28, 1887.



Witnesses:
Moses Turner
Richard Howard

Inventor:
James Norris,
By W. N. Rowe,
Atty.

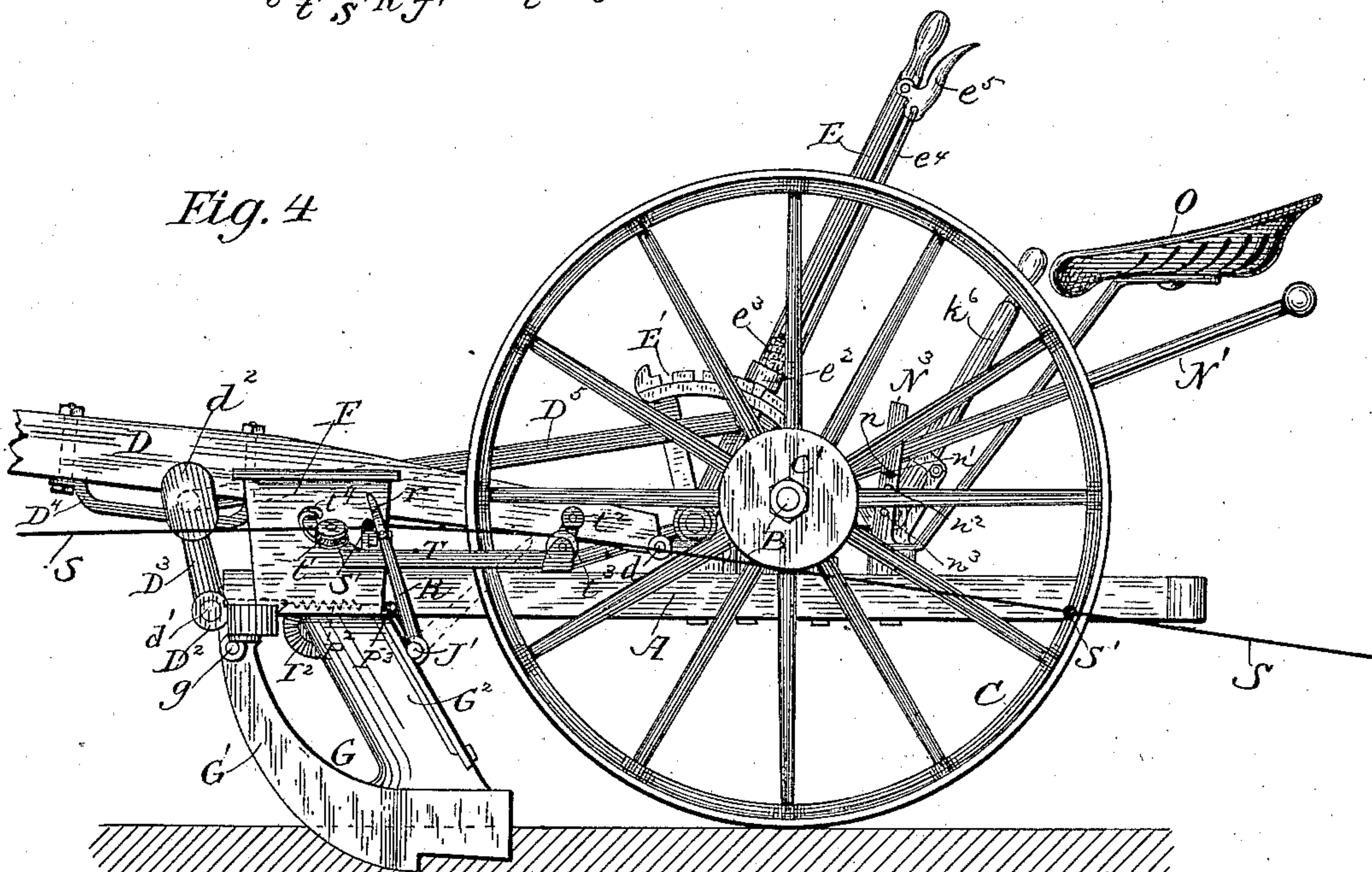
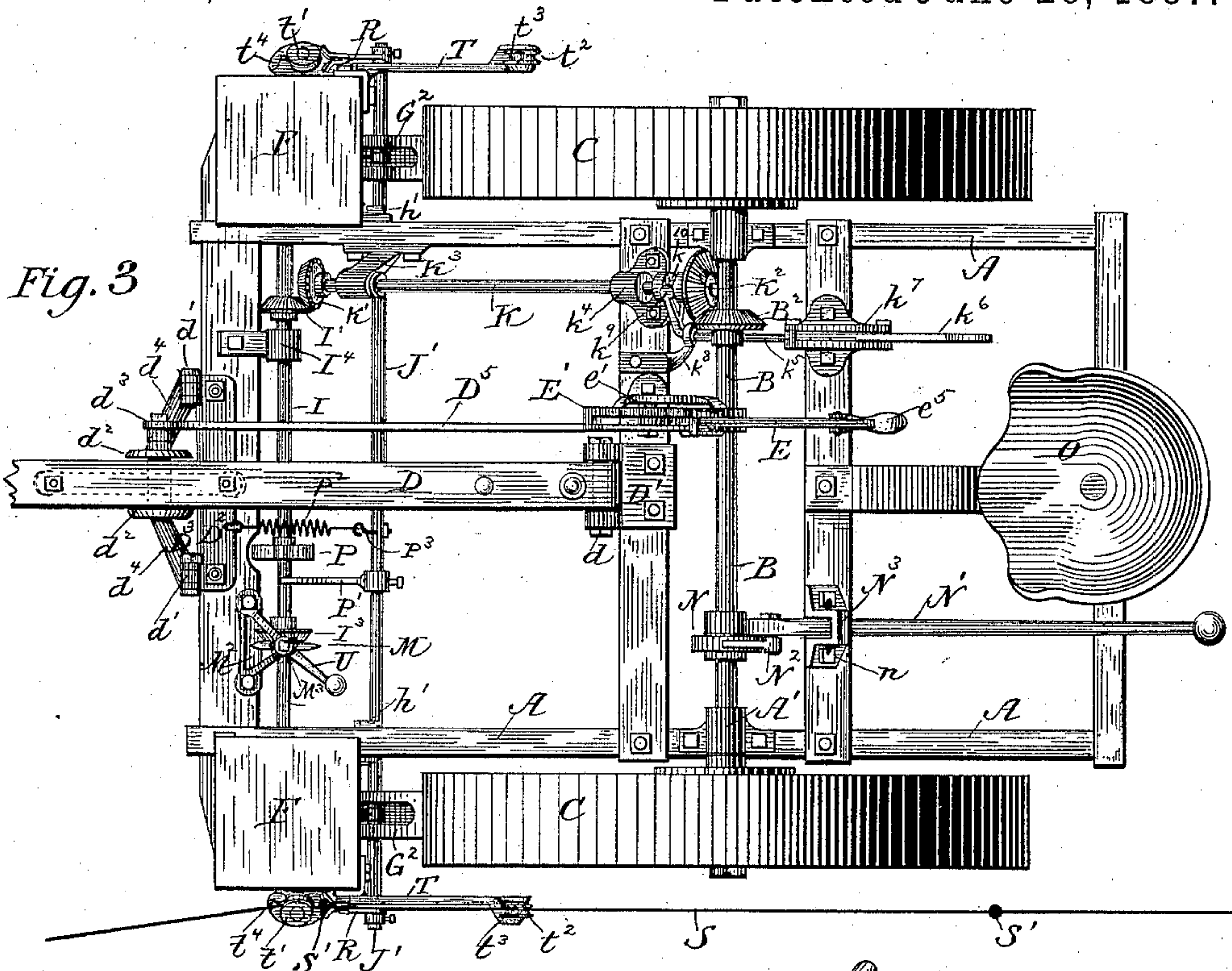
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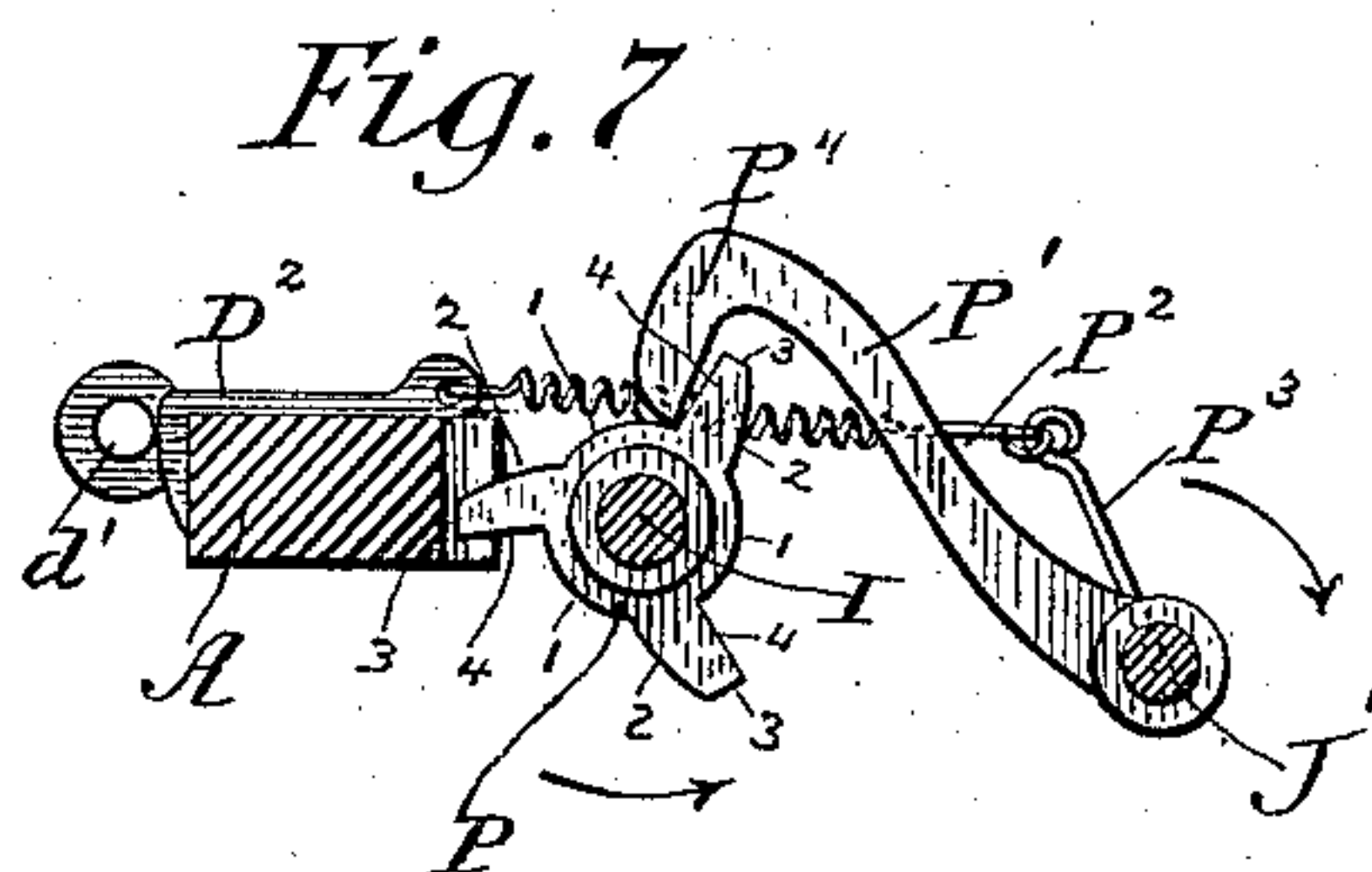
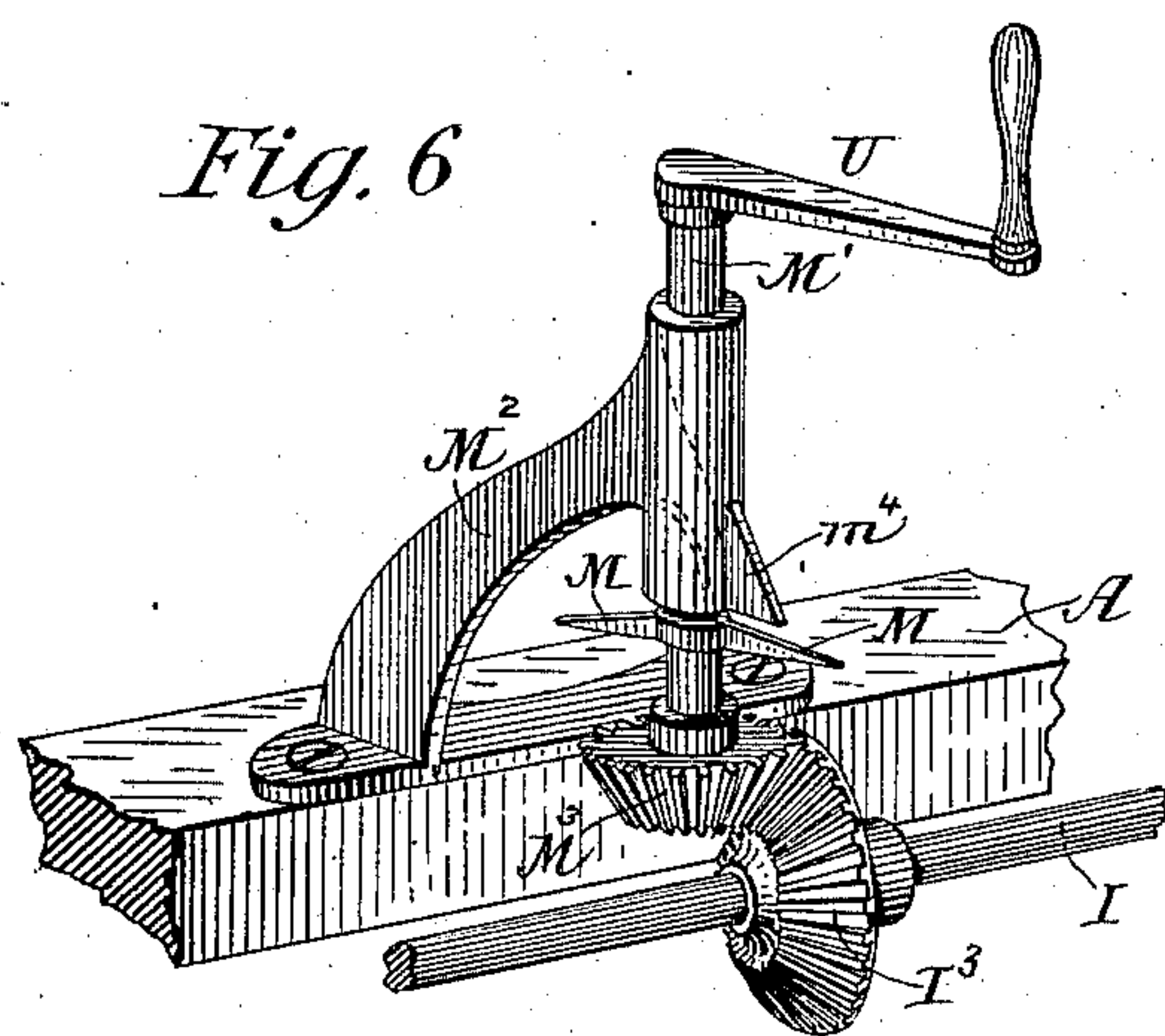
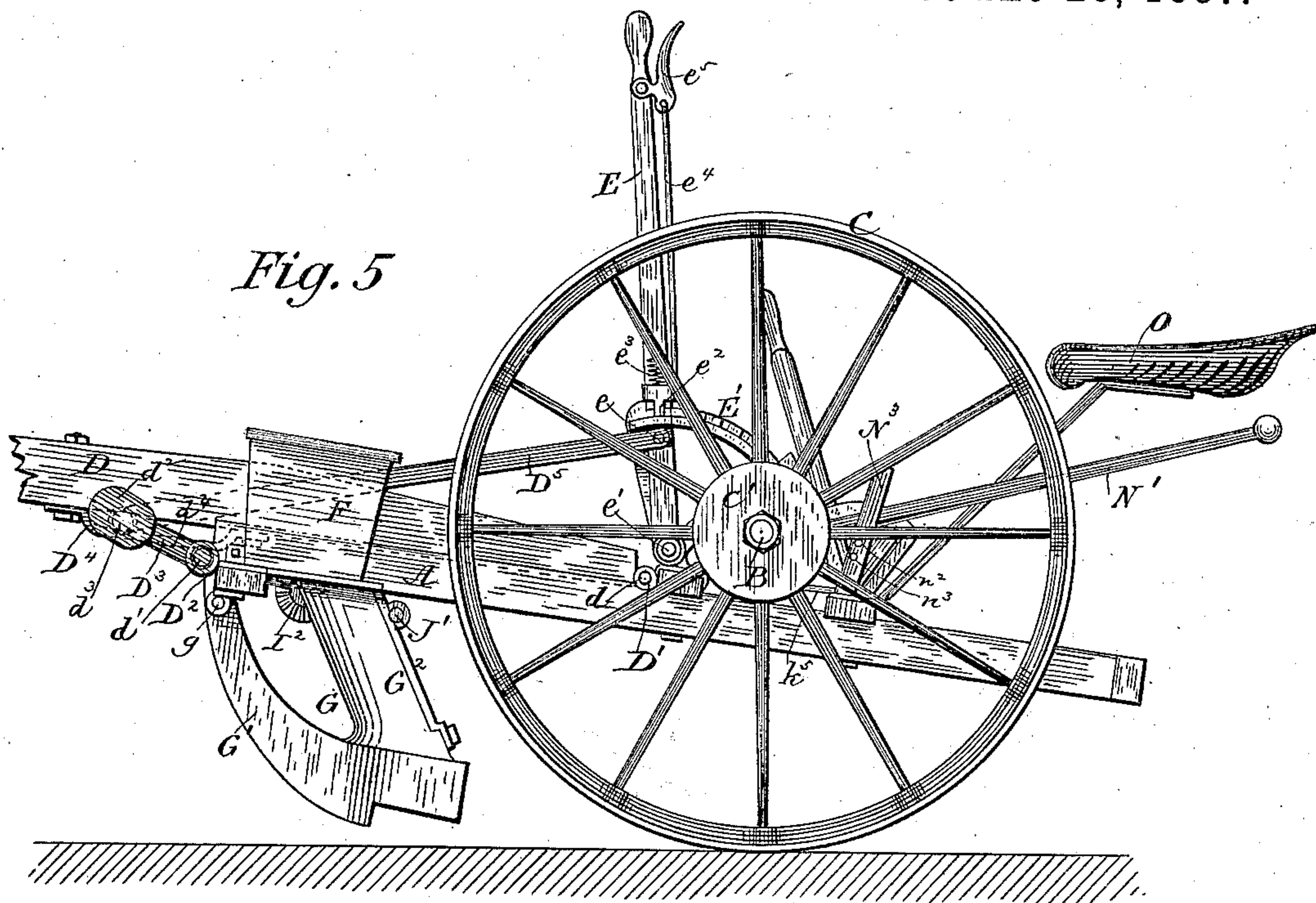
(No Model.)

4 Sheets--Sheet 3.

J. NORRIS.
CORN PLANTER.

No. 365,700.

Patented June 28, 1887.



Witnesses:
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Richard J Howard

Inventor.
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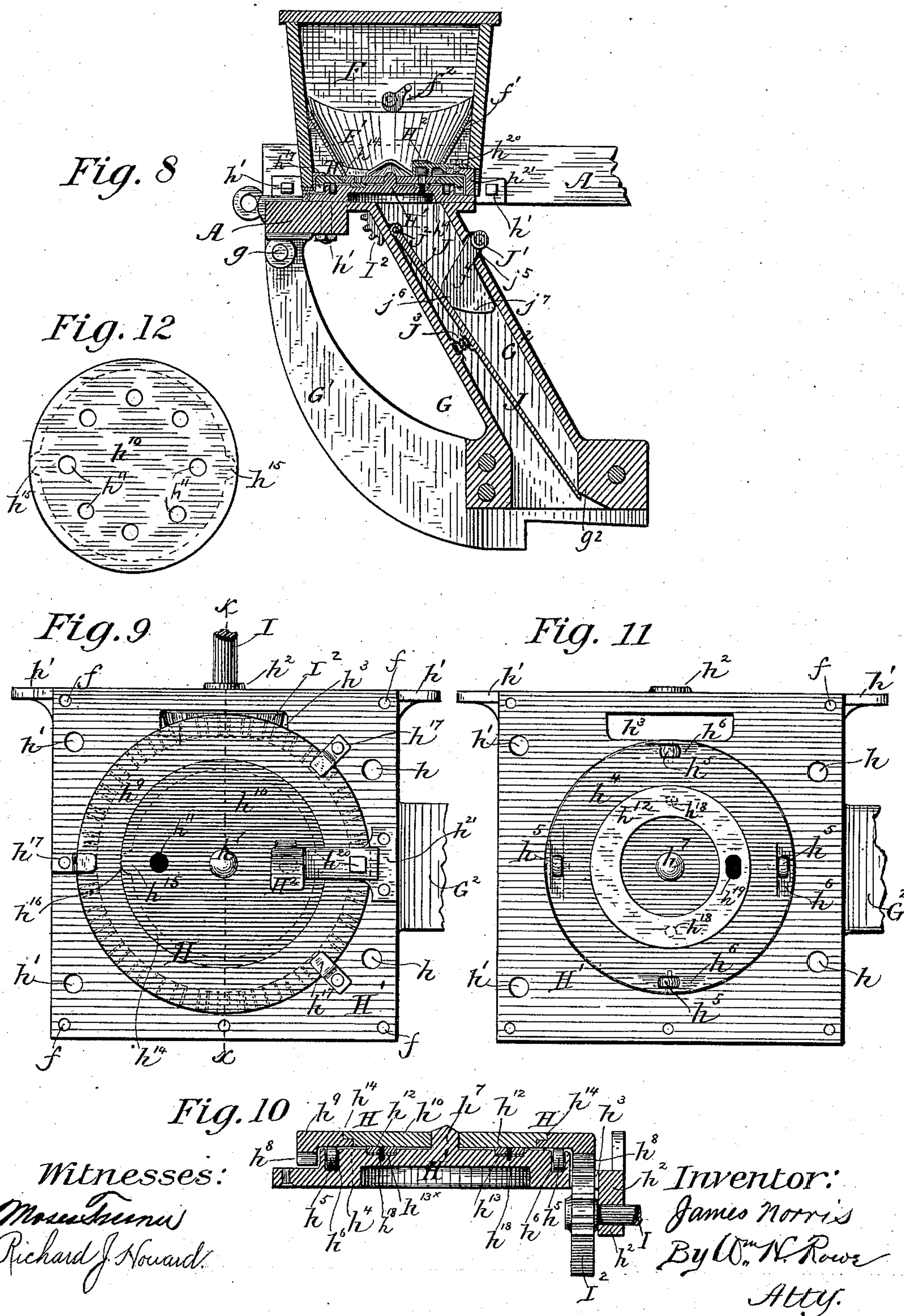
(No Model.)

4 Sheets—Sheet 4.

J. NORRIS.
CORN PLANTER.

No. 365,700.

Patented June 28, 1887.



UNITED STATES PATENT OFFICE.

JAMES NORRIS, OF CRESTON, IOWA, ASSIGNOR OF ONE-HALF TO MOSES TURNER, OF LEWISTOWN, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 365,700, dated June 28, 1887.

Application filed August 2, 1886. Serial No. 209,816. (No model.)

To all whom it may concern:

Be it known that I, JAMES NORRIS, of Creston, in the county of Union and State of Iowa, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

The object of my invention is to provide a corn-planter which will automatically drop the grain by means of mechanism actuated by the wheels of the machine, will mark upon the ground where the grain is dropped, and indicate at all times the position of the marker and grain cups; to provide means for readjusting the grain-cups and markers to check properly with the rows of corn, and to indicate when the markers are in working position; to provide check-valves which may be actuated either conjointly with the rotary dropper-plates in a novel manner or be actuated independently by a knotted check-row wire.

My machine may be operated upon good ground solely by means of the rotating supporting-wheels, or may be readily convertible for use with a check-wire employed solely to actuate the check-valve. I thus relieve the wire of undue strain, greatly simplify the check-row mechanism without impairing its accuracy, and provide a convertible machine which may be readily adapted to the varying character of the ground, and may be used either for drilling or planting.

It is also the object of my invention to provide simple means for adjusting, raising, and lowering the frame upon the tongue, and to provide a novel construction of rotary dropper.

The improvements consist in certain constructions, combinations, and arrangements of parts, which will be hereinafter particularly described, and designated in the claims, with reference to the accompanying drawings, wherein—

Figure 1 is a plan of the machine, with one of the seed-box covers removed and adapted for use without a check-wire; Fig. 2, a sectional elevation in the line $x x$ of Fig. 1, with part of the wheel-hub broken away to show the ratchet; Fig. 3, a plan of the machine, with the check-row-wire attachment applied thereto and the finger for operating the check-valve shaft from the rotary drop-shaft disengaged from its operating-cam; Fig. 4, a side elevation

of the machine, as shown in Fig. 3; Fig. 5, a side elevation of the machine, with the forward end of the frame and the shoe raised for traveling; Fig. 6, an enlarged perspective of the rotary drop-shaft, indicator, and hand-crank; Fig. 7, an enlarged sectional detail in the line $y y$ of Fig. 1, showing the frame-sill, rotary dropper-shaft, check-valve, rock-shaft, and means for oscillating the latter at suitable intervals; Fig. 8, an enlarged longitudinal sectional elevation of the seed-box, rotary dropper-plates, seed-tube, and check-valve; Fig. 9, an enlarged plan of the seed-box, bottom plate, rotary dropper-plate, cut off, and gear for operating the rotary dropper-plate; Fig. 10, a transverse section in line $x x$ of Fig. 9; Fig. 11, a plan of the bottom plate of the seed-box having friction-rollers and a filling-plate applied thereto; and Fig. 12, a plan of a removable center section, detached, belonging to the dropper-plate.

The frame A of the machine is journaled by means of brackets A' to a rotary axle, B, supported upon wheels C. A tongue, D, hinged at d to a plate, D', located upon the frame slightly in advance of the axle, extends above the forward end of the frame, and is coupled to a plate, D², secured to said frame by a bail-shaped link, D³. The link D³ bears beneath the tongue and upon a strap-plate, D⁴, secured to the under side thereof, and said link is hinged at d' upon opposite sides of the tongue to the plate D², to provide a flexible joint and brace between the tongue and frame. Side plates, d^2 , bear against opposite sides of the tongue to receive the pressure and thrust thereof, and a connecting-rod, D⁵, joined at d^3 to the link and at e to a hand-lever, E, is supported upon the frame. The hand-lever E is pivoted at e' to a segment-rack, E', to engage therewith and be adjusted thereon by means of a lock-bolt, e^2 , spring e^3 , rod e^4 , and handle e^5 , in a well-known manner.

By the above-described means the forward end of the frame may be raised and lowered to any required height.

The rotary plates H at the bottom of the seed-boxes are driven by a rotary shaft, I, which is in turn driven by an intermediate shaft, K, geared to the axle, and check-valves J, suspended within the grain-tubes, are actuated

by a rock-shaft, J', as hereinafter described, to let the seed fall upon the ground at proper intervals. Miter-gears I' K' connect the shafts I and K, and similar gears, K² B², connect the shaft K with the axle.

Brackets K³ K⁴ support the shaft K upon the frame, and a bracket, I⁴, secured to the frame, supports the shaft I alongside of the gear I' and prevents it from springing. The gear K² is keyed to the shaft K and slides endwise thereon, to be engaged with or disengaged from the axle by means of a rod, K⁵, connected to a hand-lever, K⁶, supported and adjusted upon a segment-bracket, K⁷. The forward end of the rod K⁵ is supported by a bracket, K⁸, and has a yoke, K⁹, which half encircles and fits into an annular groove, K¹⁰, in the hub of the gear K². By this means the gear K² may revolve freely and be moved longitudinally upon the shaft when it is desired to throw the dropper mechanism into and out of gear with the axle. The axle revolves freely in a ratchet-hub, C', of the wheels C, and carries plates C² and pawls C³, pivoted thereto, to engage with the ratchet-hub and permit the wheels to turn backward freely, but to engage with and turn the axle when moved forward.

Markers L are fixed to the outer ends of the axle to revolve therewith, and an index-rod, L', secured to the frame at l and carried upwardly over the wheel, points opposite to one of the said marker-arms at the moment that the seed falls upon the ground.

An indicator, M, secured to a vertical shaft, M', supported by a bracket, M², upon the frame A, is revolved by means of a beveled gear, M³, upon the shaft M', and a gear, I³, upon the rotary drop-shaft I, and registers with a pointer, m⁴, upon the bracket M² after the seed-cups in the rotary drop-plates H have deposited the required amount of seed in the seed-tubes G² and exactly when the check-valve has opened and deposited the seed upon the ground.

A ratchet-wheel, N, is secured to the axle, and a hand lever, N', journaled thereon, is provided with a pawl, N², to engage with the said ratchet-wheel when the lever is raised and moved forward, and serves to turn the axle independently of the wheels. The hand lever, pawl, and ratchet are also employed to set the rotary plates in position to drop when the gears K² B² are engaged, and to set the markers in a corresponding position when said gears are disengaged.

The indicator M and the index-rod L' will point out the proper relative position of the dropping mechanism to the markers. The hand-lever N' is held in a guide-plate, N³, and is supported within convenient reach of the driver from his seat O by a pin, n, fitted in any one of a series of holes, n' n² n³. A crank-handle, U, is fitted to the upper end of the indicator-shaft M', to provide means for operating the droppers and check-valves when it is required to plant irregular hills or complete the ends of unfinished rows. When the gears B² K² are disengaged, the crank-handle may

be easily operated, and the indicator immediately connected therewith will serve to mark the completion of each movement of the dropper and check-valve.

The seed-boxes F are secured by screws at f to a bottom plate, H'. The seed-tubes G² are bolted to said bottom plates at h, and the furrow-openers are bolted to the frame at g. The bottom plates are bolted to the frame at h', have a bearing, h², upon their under and inner sides to support the end of the rotary drop-shaft I, and have an opening, h³, upon their inner side to permit a pinion, I², upon the end of said shaft to pass up through it.

A raised circular bed, h⁴, is cast centrally in the bottom plate, H', friction-rollers h⁵ are journaled in recesses h⁶ in the face of the bed, and a pintle, h⁷, projects upwardly from its center to support the rotary drop-plate H, permit it to revolve freely with but little friction, and hold it truly in position. The drop-plate H is formed with a downwardly-projecting toothed flange, h⁸, which closely encircles the bed h⁴, rests upon and gears with the pinion I², and is turned freely upon the bottom plate by the rotation of the shaft I.

The dropper-plate is held in place upon the bottom plate and rollers by plates h¹⁷, secured to the bottom plate and overlying the dropper-plate. The rotary dropper-plate H is preferably formed with a rim-section, h⁹, upon which the gear h⁸ is cast, and a removable center section, h¹⁰, in which the seed-cups h¹¹ are formed, said sections being rabbeted, as shown at h¹⁴ in Figs. 8 and 10, upon their meeting edges, and formed, respectively, with interlocking tongues h¹⁵ and indentures h¹⁶, by which means the sections h⁹ h¹⁰ closely fit and turn together.

A number of center sections containing any required number of seed cups or plates of different thicknesses and different-sized seed-cups may thus be used interchangeably in connection with the rim-section h⁹ to plant or drill grain of different sizes—a center section with two seed-cups shown in Fig. 9, and a similar section interchangeable therewith having eight seed-cups shown in Fig. 12. When plates of varying thickness are employed, a filling-ring, h¹², is seated in an annular recess, h¹³, in the bed h⁴ of the bottom plate and rests upon liners h^{13x}, the thickness of which may be varied to raise the ring-plate until it fills the space beneath the center plate and the bottom plate. Steady-pins h¹⁸ on the filling-ring set in holes in the bottom plate and prevent it from turning with the dropper-plate.

A discharge-opening, h¹⁹, in the bottom plate and filling-ring permits the seed to pass from the rotary plate H to the seed-tube G², and a cut-off, H², of well-known construction is bolted at h²⁰ to a bracket, h²¹, upon the bottom plate. The seed is dropped by the rotation of the dropper-plate into the grain-tube G² through the elongated hole h¹⁹ in the bottom plate located beneath the cut-off in the usual way. The seed-box F is provided with a metal fun-

nel-shaped bottom, F' , of well-known form, which rests upon lugs f'' , and is held in place within the box by buttons or cams f^2 . The bottom F' may be easily removed by turning the buttons f^2 , and the center section of the rotary plate may then be slipped from under the cut-off and removed from the seed-box.

The check-valve J is pivoted at J^2 to the upper end of the seed-tube and suspended within the same, to extend to the lower end thereof and close at its free end against the projecting angle of the lower wall, g^2 , of said seed-tube. The valve J thus forms a swinging bottom to the seed-tube, over which the seed passes until it is arrested by the wall g^2 . The valve J is held closed by the spiral spring J^3 , supported upon the forward wall of the seed-tube to press beneath said valve, and is forced open by a cam, J^4 , secured to the end of the shaft J' , and projecting through a slot, j^5 , in the cover of the seed-tube. The cam J^4 is flattened at j^6 to force the valve open quickly when the shaft J' is oscillated, and is also formed with a segmental portion, j^7 , which serves to hold the valve J open the required length of time to allow the grain to drop from the bottom of the tube before the valve is again closed.

When the machine is equipped, as shown in Figs. 1 and 2, to operate both the droppers and check valves solely by the rotation of the driving-wheels, the shaft J' is oscillated by means of a cam-plate, P , upon the dropper-shaft I , a finger, P' , upon the shaft J' , and a coiled spring, P^2 , secured at one end to the frame and at the other end to an arm, P^3 , projecting from the shaft J' . The cam-plate P rotates beneath the jaw P^4 of the arm P' and raises it the required height to oscillate the shaft J' and valve J a suitable distance and hold it open a sufficient length of time to drop the seed from the tube G^2 . While the jaw P^4 is passing over the portion 1 of the cam-plate P the valve J will remain closed; while it passes over the portion 2 the valve will open; while it passes over the portion 3 the valve will remain open; while it passes over the portion 4 the valve will close, and thus continue to operate in the manner stated to open and close the valves at regular intervals. When rough and irregular ground is to be planted, the arm or finger P' is disengaged from the cam P , the indicator set to indicate when the grain drops into the grain-tube G^2 , and the markers L are removed, as shown in Figs. 3 and 4. The check-valves J are operated independently of the wheels and rotary dropper-shaft by means of levers R , secured to the ends of a shaft, J' , and a knotted check-wire, S , stretched across the field in a well-known manner, having knots S' , which engage with the forked end r of the lever R and pull it back to oscillate the shaft J' and open the check-valves J . The spring P^2 will restore the shaft J' and lever R to their normal position to close the valve when the knot S' has passed beyond the end of the lever. Brackets T , bolted to the seed-boxes F , sup-

port guide-rollers $t' t^2 t^3$ and finger t^4 in a well-known manner to support the check-wire upon the side of the machine in position to operate the lever R .

The check-wire may be supported and guided upon the brackets at either side of the machine, as usual in check-row-wire machines, the essential difference between said check-row-wire machines and the present invention being that in the former the check-wire operates both the droppers and check-valves, and in the present invention the droppers are geared to and driven by the wheels, and the check-valves alone are operated by the check-wire, thus relieving the latter of the power required to operate the droppers and gearing for connecting them, simplifying greatly the check-row mechanism, and enabling it to be operated accurately with but little power and by means of a light wire.

The indicator M will show at all times the relative position of the droppers and check-valves, and the droppers may be readily readjusted by means of the lever N whenever they fail to operate in unison with the check-valves. The indicator may consist of a finger, or a number of fingers, other than that shown in the drawings, and may be attached directly to the shaft I or shaft K , if preferred.

The rotary dropper-plates may be provided with seed-cups which will hold but one or two grains of corn, and may be operated continuously to discharge at least two of the seed-cups into the seed-spout between each operation of the check-valve, thus insuring a deposit of a greater or less number of seed each time that the check-valve is operated.

When the machine is at work, the shoes are forced into the ground to the required depth by drawing back the lever E , and when the machine is traveling the shoes are lifted out of the ground by moving the hand-lever E forward, as shown in Fig. 5.

I am aware that various means have been employed heretofore for operating the droppers from the wheel for adjusting the droppers and markers and for indicating the position of such parts.

I am also aware that dropper-plates have been made in two sections, one of which sections carries seed-cups and is removable, and I do not broadly claim such device as new.

I claim as my invention and desire to secure by Letters Patent—

1. In a corn-planter, the combination, with the frame and wheels of the revolving axle, droppers geared to and driven by the axle, an indicator revolving with the dropper, the shifting-lever for connecting and disconnecting the droppers and markers secured to the axle, and a lever, ratchet-wheel, and pawl for setting either the markers, indicator, or droppers separately or together, substantially as described.

2. In a corn-planter, the combination, with the frame of the wheels, the marker and dropper actuated by the wheels, means for con-

necting and disconnecting the marker and dropper, and a pointer stationarily affixed to the frame to indicate the true position of the marker relatively to the dropper, substantially as described.

3. The combination, with the wheel-frame A, of the rotary droppers H, rotary shaft I, the shoe G, check-valves J, shaft J', extending across the machine for actuating the check-valves, and arms upon the ends of said shaft actuated by the check-wire, substantially as described.

4. In a corn-planter, the combination, with the wheel-frame, of droppers actuated by the wheel, and check-valves actuated independently of the droppers by a check-wire, substantially as described.

5. In a rotary dropper for corn-planters, the combination, with the bottom plate, H', having a raised bed, h^4 , center-pin h^7 , and friction-rollers h^5 , of the dropper-plate H, having a downwardly-projecting toothed flange to encircle the bed, the gear-pinion I², and dropper-shaft I, substantially as described.

6. In a rotary dropper for corn-planters, the combination, with a seed-box, of a bottom plate secured thereto, having a raised bed, h^4 , center-pin h^7 , friction-rollers h^5 , a gear-pinion opening, h^3 , dropper-plate H, having a downwardly-projecting toothed flange to encircle the bed, the gear-pinion I², projecting upwardly through the opening, and the dropper-shaft I, substantially as described.

7. In a rotary dropper for corn-planters, the combination, with the bottom plate, H', a dropper-plate made with an outer section having a toothed flange and a removable inner section having seed cups, with a rotary shaft and gear-wheel to engage with the outer section,

substantially as described, for the purpose specified.

8. In a rotary dropper for corn-planters, the combination, with the bottom plate, H', having a raised bed, h^4 , of a center-pin, h^7 , friction-rollers h^5 , and the dropper-plate made in two sections, one of which encircles the other, the central section being provided with seed-cups, substantially as and for the purpose described.

9. In a rotary dropper for corn-planters, the combination, with the bottom plate, H', having a raised bed, h^4 , a center-pin, h^7 , and friction-rollers h^5 , of the dropper-plate H, made in two sections, and plates h^{17} , secured to the bottom plate for holding the outer section of the dropper-plate in place upon the bed, substantially as described.

10. In a rotary dropper for corn-planters, the combination, with the bottom plate, H', having a raised bed, h^4 , center-pin h^7 , and friction-rollers h^5 , of the dropper-plate made in two sections, and a filling-ring, h^{12} , supported and adjusted upon the bottom plate, substantially as described.

11. In a corn-planter, the combination, with the wheel-frame, of the plates D' D², a tongue pivoted to the plate D', a strap-plate, D⁴, secured to the under side of the tongue, a bail-shaped link, D³, guided to move between the under side of the tongue and strap-plate, having bearing-plates d^4 moving upon opposite sides of the tongue, and a lever mechanism for rocking the link D³, substantially as described.

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Witnesses:

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